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**D E C I S I O N**  
of 22 October 2002

**Case Number:** T 0959/98 - 3.3.6

**Application Number:** 92910134.3

**Publication Number:** 0577742

**IPC:** G03C 1/74

**Language of the proceedings:** EN

**Title of invention:**  
Coating method

**Patentee:**  
EASTMAN KODAK COMPANY

**Opponent:**  
Fuji Photo Film Co., Ltd.

**Headword:**  
Reynolds number/EASTMAN KODAK

**Relevant legal provisions:**  
EPC Art. 54, 84, 123

**Keyword:**  
"Novelty (no) - mental act not leading to subject-matter differing from the state of the art"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0959/98 - 3.3.6

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.6  
of 22 October 2002

**Appellant:**  
(Proprietor of the Patent)

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**Representatives:**

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**Respondent:**  
(Proprietor of the patent)

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**Representative:**

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**Decision under appeal:**

Interlocutory decision of the Opposition Division  
of the European Patent Office posted 4 August  
1998 concerning maintenance of European patent  
No. 0 577 742 in amended form.

**Composition of the Board:**

**Chairman:** P. Krasa  
**Members:** G. N. C. Raths  
C. Holtz

## Summary of Facts and Submissions

I. This appeal is from an interlocutory decision of the Opposition Division to maintain the European patent 0 577 742 in amended form. In a notice of opposition, based on lack of inventive step, the following documents were submitted inter alia:

- (1) US-A-4 623 501,
- (2) US-A-4 525 392 and
- (3) US-A-4 001 024.

During the opposition proceedings a further document

- (4) EP-A-0 439 172

was cited by the opponent, now the respondent.

II. In its decision the Opposition Division found that the Claims of the proprietor's (now the appellant's) auxiliary request filed during oral proceedings before the Opposition Division met the requirements of the EPC, but rejected the appellant's main request as being anticipated by citations (1) to (4).

III. The appellant lodged an appeal against this decision; it argued as follows:

The references (1) to (4) did not refer to the slot Reynolds numbers; even if they disclosed all the parameters for obtaining said Reynolds number, this specific number was not disclosed. The step of calculating this slot Reynolds number as well as the adjusting step in response to that calculation established novelty with respect to said documents.

Apart from rendering the subject-matter of the main request novel, the two features, i.e. the calculation and the adjusting step, would also render the claimed subject-matter inventive.

IV. The respondent (opponent) refuted the arguments of the appellant as follows:

The slot Reynolds number was only a derivative figure to be calculated from other parameters disclosed in the prior art documents.

In support of its arguments, it filed document

(6) Stephan F. Kistler, "The Fluid Mechanics of Curtain Coating and related Viscous Free Surface Flows with Contact Lines", University of Minnesota, November 1993, pages 189 to 217.

Novelty could not be claimed for a mere calculation of a number which was the result of a mathematical operation comprising known parameters.

V. At the oral proceedings before the Board taking place on 22 October 2002, the appellant (proprietor) requested a decision on the following request, designated "main request", which was filed with the grounds of appeal. This request comprised five claims, of which Claim 1 read (after amendment of a clerical error during oral proceedings before the Board) as follows:

"1. The method for coating a photographic composition on a moving support by means of a coating hopper having one or more coating slots so as to coat at least one layer of photographic composition on said support, each of said slots having a slot Reynolds number defined by

$$\text{slot Re} = \rho Q / \eta$$

where  $\rho$  is the fluid density of the composition in the respective slot,  $\eta$  is the fluid viscosity of the composition in the respective slot and  $Q$  is the slot volumetric flow rate per unit width of the composition in the respective slot

and which comprises

- (a) determining the conditions for flowing said composition through said slot or slots which corresponds to a slot Reynolds number no greater than 10, by calculating a slot Reynolds number, determining whether the slot Reynolds number is greater than 10, and adjusting one or more of the parameters comprising the slot Reynolds number such that the slot Reynolds number becomes less than 10;
- (b) flowing said composition through said slot or slots under said conditions;
- (c) receiving said composition flowing from the coating hopper on said moving support."

Claims 2 to 4 represented preferred embodiments of the same inventive concept.

- VI. The appellant requested that the decision under appeal be set aside and that the patent be maintained with Claims 1 to 5 according to the main request filed with the grounds of appeal.

The respondent requested that the appeal be dismissed.

## Reasons for the Decision

### 1. Article 123 EPC

Claim 1 differs from Claim 1 as originally filed by insertion of two passages.

The first passage "so as to coat at least one layer of photographic composition on said support, each of said slots having a slot Reynolds number defined by

$$\text{slot Re} = \rho Q / \eta$$

where  $\rho$  is the fluid density of the composition in the respective slot,  $\eta$  is the fluid viscosity of the composition in the respective slot and  $Q$  is the slot volumetric flow rate per unit width of the composition of the respective slot" finds its basis in original Claim 7 and in the application as originally filed (page 7, lines 30 to 33).

The second passage "by calculating a slot Reynolds number, determining whether the slot Reynolds number is greater than 10, and adjusting one or more of the parameters comprising the slot Reynolds number such that the slot Reynolds number becomes less than 10" finds its basis in the application as originally filed (page 8, lines 17 to 21): "To provide the coating conditions which correspond to a slot Reynolds number no greater than about 10 in the method of the invention, the flow rate or the viscosity of the liquid coating composition can be adjusted." Even if the passage "determining whether the slot Reynolds number is greater than 10" was not explicitly disclosed in the description as originally filed, this mental act will implicitly be performed by the skilled person because it is a precondition for inciting him to adjust the

parameters so that slot  $Re < 10$ . Therefore, in this case, the above-mentioned passage on page 8 (lines 17 to 21) in the application as originally disclosed supports the amendment.

The Board is satisfied that the requirements of Article 123 EPC are met.

## 1.2 Articles 83 and 84 EPC

On request of the Board during oral proceedings, the appellant confirmed that the term "determining" in the passage "determining the conditions for flowing said composition" means "arranging" or "fixing" whereas the same term in the expression "determining whether the slot Reynolds number is greater than 10" means "finding out" or "establishing".

Further, the respondent had argued in writing that the parameters had not been defined and nobody could select the conditions of a fluid "for simply flowing it" (step (a) of Claim 1) (letter of 29 March 1999, page 3, lines 1 to 4 from the bottom).

The Board does not agree with the reasoning of the respondent. There are no doubts that a skilled person is familiar with the formula defining the slot  $Re$ . As for the density, little or no latitude is available for changing the density of photographic coating compositions (patent in suit, page 4, line 40). The adjusting of the viscosity can be made by addition either of a solvent (patent in suit, page 4, line 41) or of a viscosity increasing agent as was known already in the art (see document (2), lines 38 to 61). The slot volumetric flow rate per unit width could be influenced by designing the slot in the hopper or by setting the flow rate conditions. Therefore, the Board concludes

that the skilled person was able to identify the conditions which have to be adapted to obtain a slot Re lower than 10 so that the composition may flow.

Thus the Board is satisfied that Claim 1 meets the requirements of Article 84 EPC and also of Article 83 EPC.

### 1.3 Novelty

- 1.3.1 Claim 1 refers to a method, i.e. a process, for coating a photographic composition on a moving support whereby a coating hopper is used having one or more coating slots and whereby the parameters  $\varrho$ ,  $Q$  and  $\eta$  of the flow of the coating composition are such that the slot Reynolds number(s) of the slot(s) is (are) less than 10. The slot Reynolds number is a figure calculated from the values measured for  $\varrho$ ,  $Q$  and  $\eta$  according to the formula given in Claim 1:

$$\text{slot Re} = \varrho Q / \eta.$$

It is noted that slot Re as such cannot be measured but results from the mental act of applying the above formula to the parameters  $\varrho$ ,  $Q$  and  $\eta$ , i.e. slot Re is the result obtained from the above mentioned calculation.

It is further noted that Claim 1 contains no limitation regarding form or dimensions of the coating hopper which means that it reads on any conceivable coating hopper and, therefore, also on that of document (1).

- 1.3.2 Document (1) disclosed a method for coating a substrate in order to manufacture a photographic photo-sensitive material (column 1, lines 1 to 10). By the means of a coating device having not only a main supply pipe but also auxiliary supply pipes for the cavity in the



coating head, a coating composition was supplied into the cavity in the coating head and was then extruded through a slot for application to a belt-like substrate (column 1, lines 47 to 51).

- 1.3.3 The viscosity  $\eta$  and the flow rates  $Q$  of photographic layer compositions were indicated in document (1). The density  $\rho$  of the photographic compositions was not indicated. However, according to the patent in suit "little or no latitude is available for changing the density of photographic coating compositions" (page 4, lines 40 to 41). Therefore, the density of the photographic compositions according to the patent in suit and according to document (1) are comparable. In particular, a density of the photographic layer composition of  $1 \text{ g/cm}^3$  used by the respondent in its calculations (see point 1.3.4 below) but not explicitly disclosed in document (1) was considered by the appellant during the oral proceedings before the Board to be reasonable and acceptable.
- 1.3.4 The calculations submitted by the respondent during the opposition proceedings (letter of 16 November 1995) showed that the slot  $Re$  of the blue-sensitive gelatine silver halide emulsion layer, of the green-sensitive and of the red-sensitive layers of the coating compositions for photographic colour paper of Example 1 of document (1) was 0.72, 0.72 and 0.56 for the respectively, layers, i.e. lower than 10. The appellant did not contest the correctness of the calculations made by the respondent.
- 1.3.5 It follows that document (1) discloses directly and unambiguously a method for coating a photographic composition on a moving support, the physical steps of which are identical to those of the process of present Claim 1.

- 1.3.6 The appellant submitted that the calculation of the slot Reynolds number and the adjusting step in response to that calculation distinguished the claimed process from the prior art. It emphasized that this (see feature (a) of Claim 1) was not a "mere calculation".
- 1.3.7 The Board cannot accept this argument. A skilled person following the technical teaching of Example 1 of document (1) would necessarily have to "adjust" the parameters under consideration to that end since otherwise the practical realisation of this technical teaching would be impossible. This shows that, even if it is accepted that Claim 1 calls for a calculation, the mental act remains the only feature not mentioned in document (1), which feature however is not a technical one.
- 1.3.8 In the present situation, the said mental act will not lead to subject-matter which differs from that disclosed in document (1). Therefore, under the circumstances of this case, this non technical feature cannot render the subject-matter of Claim 1 novel.
- 1.3.9 Therefore, Claim 1 does not meet the requirements of Article 54 EPC.
- 1.4 Consequently, the request, designated "main request", is not allowable.

**Order**

**For these reasons it is decided that:**


The appeal is dismissed.

The Registrar:

The Chairman:



G. Rauh



P. Krasa